

ENABLING YOUR TECHNOLOGY

Gelest develops molecular materials that enable nanotechnology through surface modification for industrial applications in:

Microelectronics & Optoelectronics

Displays, Optics & Telecommunications

Energy & Transportation

Biotechnology & Health Sciences

Consumer Goods & Personal Care

Chemical Structure

Silylating Protecting Groups

Organic Synthetic Reagents

Cross-coupling

Synthons

Reducing

Surface Modification

Drug Delivery

Diagnostics

Chromatography





Nanotechnology encompasses processes that have control of physical and chemical features at the molecular level.

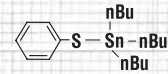
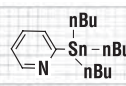
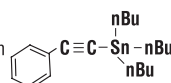
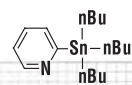
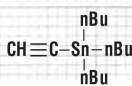
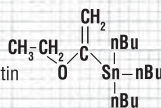
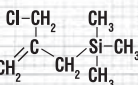
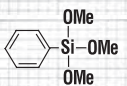
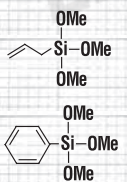
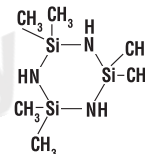
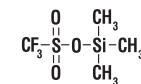
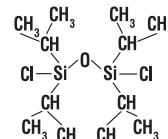
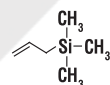
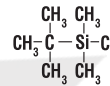
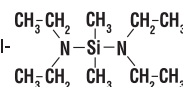
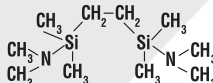
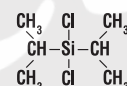
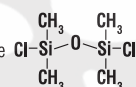
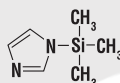
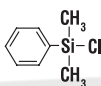
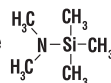
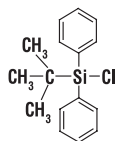
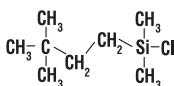
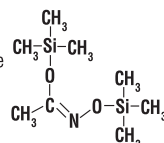
Gelest produces Group IV molecular materials used by scientists for surface and chemical structure modification and as building blocks to develop active pharmaceutical intermediates, chemical syntheses and diagnostic devices for drug discovery. Gelest's R&D staff collaborates with scientists from many countries to develop new molecular materials and its Operations staff personally oversees the development and scale-up of new products from the laboratory through commercial production.

Gelest has built a state of the art facility on a 21 acre campus with a integrated production site that provides the required infrastructure with high standards for work safety, health and environmental protection. Gelest has a Quality Management Program that meets the stringent requirements for our target markets. Gelest's R&D labs, kilo labs and commercial manufacturing are in a single location along with support services such as analytical and application testing. Gelest's products are available worldwide either via our distribution network or direct shipment. Products can be made in large commercial quantities (metric ton lots).

Gelest leverages its expertise in Group IV chemistry and process technology to manufacture and develop molecular materials for surface modification and organic synthesis. These are hybrid materials containing both organic and inorganic reactivity in the same molecule. They can be customized to control selectivity, reactivity and stability in different environments. Group IV molecular materials are typically used as catalysts, building blocks and protecting groups for the following functionalities:

Hydroxyl	Thiol	Amines	Thiophenol	Enol	Halogen
Phosphoramidite	Alcohol	Aldehyde	Metal Oxide		Ester
Thiazole	Nucleotide	Pyridine	Ketone	Amide	Urea
Carbonyl	Hydrazine	Amino Acid	Nucleoside	Amino Acid	
Phosphoric Acid Ester	Carboxylic Acid	Ether	Phenols	Hydroxylamine	



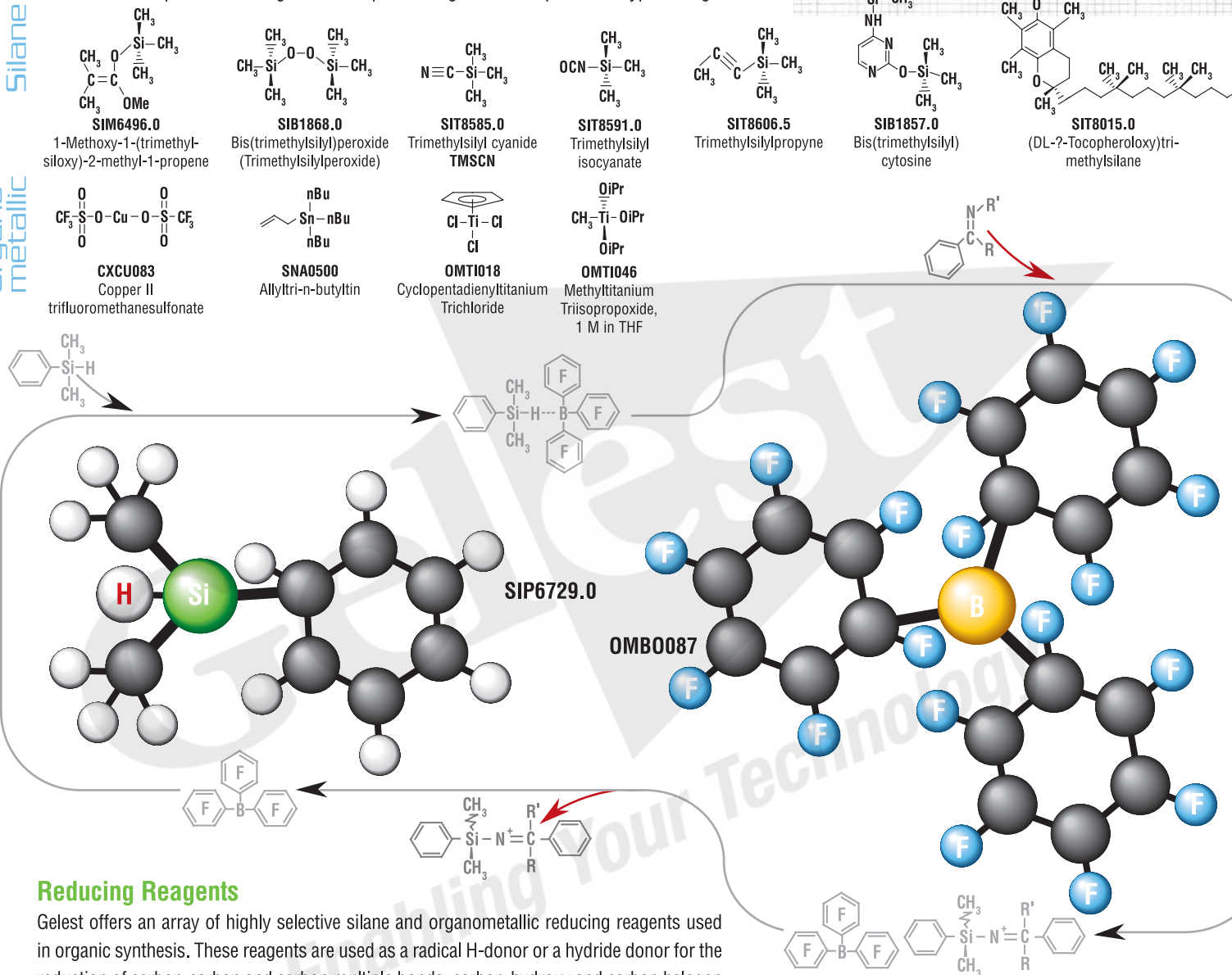


Synthetic Reagents

Gelest's silane and organometallic reagents are used as building blocks for active pharmaceutical intermediates. These reagents are used in intermediate synthetic steps to modify chemical structures by forming carbon-carbon and carbon-heteroatom bonds; for example, silyl enol ethers are highly selective nucleophiles for making carbon-carbon bonds. Please see Gelest's 'Silicon-Based Blocking Agents' and 'Silicon Based Synthetic Reagents, Tetra Substituted' brochures and the 'Metal-Organics for Materials' and 'Silicon Compounds' Catalogs for a complete listing of Gelest's products. Typical reagents are:

Silane

Organo-metallic

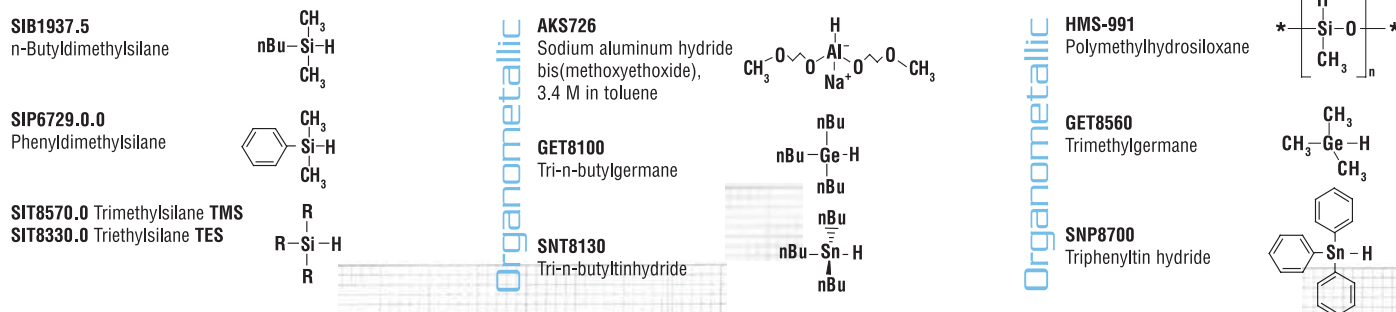


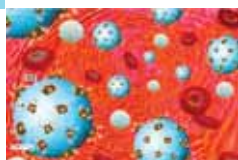
Reducing Reagents

Gelest offers an array of highly selective silane and organometallic reducing reagents used in organic synthesis. These reagents are used as a radical H-donor or a hydride donor for the reduction of carbon-carbon and carbon multiple bonds, carbon-hydroxy and carbon halogen bonds. Please see Gelest's 'Silicon-Based Reducing Agents' brochure, 'Metal-Organics for Materials' catalog and 'Silicon Compounds' catalog for a complete listing of Gelest products.

Silane

Organo-metallic





"Missile Drugs" traveling through blood vessels on their way to the affected area

SURFACE MODIFICATION

Drug Delivery

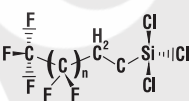
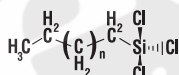
Gelest offers "sol-gel precursors", "silane coupling agents" and "silicone fluids, waxes and elastomers" used to attach or encapsulate active pharmaceutical intermediates for control and release devices. These molecular materials can be selectively modified to customize the desired chemical, biological and release properties which control the diffusion process of the drug delivery mechanism. Please see Gelest's 'Silicon Compounds' Catalog, 'Metal-Organics for Materials' Catalog and the 'Silane Coupling Agents', 'Reactive Silicones', 'Gelest Silicones Encapsulating and Coatings' and 'Silanes & Silicones for Epoxy Resins' brochures for a complete listing of Gelest products.

Diagnostic Devices

Gelest has developed a line of molecular materials that can be applied from solution or neat using conventional lithography techniques to form self-assembled monolayers, SAMs. The surface can be selectively modified to achieve the desired chemical and biological properties for BioMEMS, μ arrays and μ fluidic devices. These molecular materials allow for the attachment of reactive and bioactive molecules, oligonucleotides, proteins, DNA and modified DNA. In addition, these materials are used to provide anti-stiction, lubrication, anti-fouling (non-specific binding) and moisture resistant (MRTs) properties. These molecular materials can be applied by using conventional silane coupling or Molecular Vapor Deposition technique, MVD™. Applied Microstructures Molecular Vapor Deposition tool, MVD-100, applies Gelest's molecular materials via an enhanced vapor deposition process that incorporates plasma surface cleaning and an advanced multi-precursor vapor delivery. Please see Gelest's 'Silane Coupling Agents' brochure and 'Silicon Compounds' Catalog for a complete listing of Gelest products.

Anti-fouling for Non-specific Binding Coatings

SI16453.0	Isobutyltrichlorosilane IBTCS
SI02663.0	Dodecyltrichlorosilane DTCS
SI06713.0	Octyltrichlorosilane OTCS
SI04630.0	Dodecyltrichlorosilane DDTCS
SIT8174.0	Tridecafluorotetrahydrooctyltrichlorosilane FOTS
SIH5841.0	Heptadecafluorotetrahydrodecyltrichlorosilane FOTS
SIN6597.7	Nonafluorohexyltrimethoxysilane FNTS
SIT8371.0	Trifluoropropyltrichlorosilane FPTS
SIM6492.7	2-(Methoxy(polyethylenoxy)propyl)trimethoxysilane mPEGS
SIS6952.0	Siliclad™ -Anti-fouling coating



Fluorescent Chromophores

SIT8192.4	N-Triethoxysilylpropyl-O-quinineurethane
SIT8187.0	N-(Triethoxysilylpropyl)dansylamide
SIT8186.2	7-Triethoxysilylpropoxy-5-hydroxyflavone

Encapsulation of Biologically Active Molecules –Silicones

RMS-033, UMS-182	Acrylate functional silicones
DMS-E11, ECMS-227	Epoxy functional silicones
AM 118, AM 116	Alkyl modified silicone wax
DE 23, PM 212	Alkyl & aryl modified silicone fluids

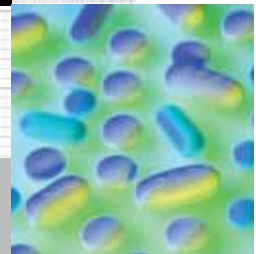
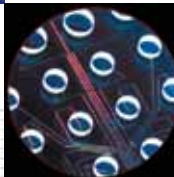
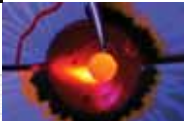
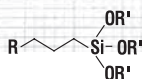
RTV Silicone elastomers:

Zipcone-FN	1-part Condensation cure
Gelest OE-41	2-part Addition cure
Gelest RG-02	2-part Addition cure



Immobilization of Biologically Active Molecules – Silanes

SI16455.0	3-Isocyanatopropyltriethoxysilane CYNPS (R= Isocyanate)
SIT8185.3	Triethoxysilylbutyraldehyde ALDPS (R= Aldehyde)
SIG5840.0	(3-Glycidoxypropyl)trimethoxysilane GPS (R= Epoxy)
SIM6476.0	3-Mercaptopropyltrimethoxysilane MPS (R= Sulfur)
SIA0611.0	3-Aminopropyltrimethoxysilane APS (R= Amino)
SI06709.0	7-Octenyltrimethoxysilane OTS (R=vinyl)
SIM6487.4	3-Methacryloxypropyltrimethoxysilane (R= acrylate)
SIE4670.0	3,4-Epoxy cyclohexyltrimethoxysilane ECPS (R=epoxy)
SIU9047.0	10-Undecenyltrichlorosilane V11TCS (R=vinyl)

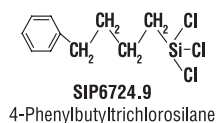
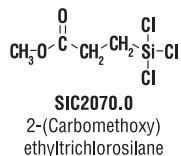
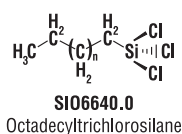




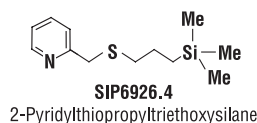
CHROMATOGRAPHY

Gelest offers silanes with various functional and non-functional groups that are used in the surface modification of silica particles for HPLC, SPE and prep-scale chromatography to analyze, test and purify active pharmaceutical intermediates. Depending on the properties of the active ingredient, the appropriate materials can be selected for use in normal, reverse and fluoruous phases. Please see the 'Silicon Compounds' Catalog for a complete listing of Gelest products. Typical materials are:

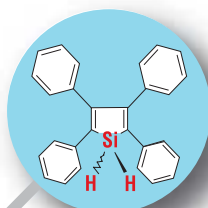
Reverse
Phase



Hydrophilic
Counter-ion
Chromato-
graphy



Molecular Materials



Development



Manufacturing



Analytical Testing



Delivery Systems



Gelest is a worldwide supplier of commercial molecular materials for high tech industries and meets industry quality standards. We operate state-of-the-art characterization, synthesis, development and production facilities for chemical and polymers.



PHARMACEUTICALS



DNA ARRAY

Gelest

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11 East Steel Road • Morrisville, Pennsylvania 19067
Phone 215-547-1015 • Toll-Free 888-734-8344 • Fax 215-547-2484
www.gelest.com